points. Therefore, a CLEC's "use" of NGDLC functions, features, and capabilities at any point between the customer's premises and the ILEC central office, including (in addition to any copper facilities) fiber feeder and associated passive and active electronics in the so-called "unified loop" (such as remotely deployed DSLAMs, splitters and OCDs in ILECs' central offices), is entirely consistent with – and indeed required by – the existing definition of the loop. In fact, the Texas Public Utilities Commission, after a careful analysis, concluded:

> the transmission facility, whether it is end-to-end copper, or a configuration of copper and fiber with a remote terminal and remotely located electronics, is within the definition of an unbundled loop. Consequently, SWBT must provide CLECs access to the unbundled loop element from the demarcation point at the customer's premises to the terminal (port) on the OCD in the central office, including the associated electronics at the RT and CO.

Texas II at 69.

a. Remotely deployed DSLAMs do not – indeed cannot – perform any switching functions and are "attached electronics" of the local loop.

The record refutes any notion that a remotely placed DSLAM that is deployed in an NGDLC architecture performs any switching functions at all; rather, it provides core *transmission*, not switching, functionality.[160] Thus, there is no legitimate argument that a remotely placed DSLAM is not part of the "unified" loop element. Indeed, since all communications passed through a remotely deployed DSLAM pass only between two locations – the customer's premise on one end and the ILEC central office on the other – it is *impossible* for the DSLAM to perform any switching at all.

[160] AT&T *Fifth FNPRM* Comments at 60-64; AT&T *Fifth FNPRM* Reply Comments at 46-54, 76-78; AT&T *Line Sharing Recon. Order* Comments at 11-13; AT&T *Line Sharing Recon. Order* Reply Comments at 8-9.

Switching is the interconnection of facilities to create end-to-end transmission paths for communications where the physical path between the two connected points may be different each time a connection is made. Here, however, the unrebutted evidence demonstrates that a DSLAM does not create such transmission paths. Rather, it performs only encoding, buffering and multiplexing– all of which are transmission functions.[161]

Once the transmission from the customer premises is split into the high-frequency and low-frequency components – a function that is neither an advanced service nor a switching function[162] – DSLAMs in a remote terminal accept the packets created by retail customers' computers and accumulate them in a buffer. Then they efficiently place those packets (in a manner that co-mingles – or concentrates – individual customer packets so as to conserve capacity) onto a feeder facility that carriers them to the ILEC's central office. Because (in an outgoing communication) the DSLAM receives packets from only one place (the customer's premise) and places them only onto a single facility connected to a single ILEC's central office, there is no way that it can perform any switching functionality. [163]

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[161] AT&T *Fifth FNPRM* Comments, Attachment 3, Riolo NGDLC Dec. ¶¶ 51-56.

[162] A splitter is a passive electronic device that is necessary to enable a carrier to provide both voice and data services on the same loop. A splitter simply subdivides a physical conductor (*i.e.*, the loop) into two separate transmission channels based upon frequency. It is a very rudimentary form of multiplexing, because it permits two distinct signals on a single conductor. For this reason, a splitter must also be considered part of the "unified" loop. *See, e.g.*, Riolo NGDLC Dec. ¶¶ 63-64.

[163] Even in a central office environment, a DSLAM operates, as its name implies, only as a multiplexer, not as a switch. A DSLAM has no ability to perform the basic function of a switch, *i.e.*, to choose and establish real-time routing paths for particular combinations of signals. A central office DSLAM has multiple subscriber loops on the customer side and one facility on the network side. The DSLAM connects the signals in a GR303 format to one and only one circuit switch and connects signals in cell format to one and only one ATM device. The DSLAM makes no determination regarding the transmission path that will be used for a particular transfer

(continued . . .)

Because no switching occurs at the remote terminal, there is no basis to exclude incumbent DSLAMs in remote terminals from the definition of the "attached electronics" that are part of the existing definition of the loop element. Indeed, the Commission itself has recognized several times that DSLAMs in fact perform multiplexing and related "electronic" functions.[164] Thus, the Commission's own words recognize the error of categorizing DSLAMs as any form of "switching."

b. The Commission has correctly held that fiber feeder is part of the loop.

The Commission must not eliminate fiber feeder from the loop element by adopting unbundling requirements specific to the "unique characteristics of the underlying facilities" of a unified loop element. *See Notice* ¶ 50. For over two years, the ILECs have "hid[den]" loops from the CLECs by arguing that their NGDLC architecture has "unique characteristics" that somehow shatters the loop into a collection of piece parts (copper wire, transport, and packet switching) that the CLEC must either reassemble or build itself. But the ILECs' argument ignores that copper-fiber hybrid loops have been in operation for more than a decade, refuting any notion that this architecture is either "new" or "advanced" or that Congress was unaware that such loops existed at the time the Act was drafted. Thus, the Commission should define the

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of information. Rather, as noted above, it sends a co-mingled stream of packets from multiple data communications sent by multiple customers. AT&T *Fifth FNPRM* Comments at 61-62; Riolo NGDLC Dec. ¶ 55.

[164] *See, e.g., Project Pronto Waiver Order* ¶ 15 ("DSLAMs often perform a spectrum splitting function in addition to their *primary multiplexing functionality*") (citation omitted) (emphasis added); *Broadband Notice* ¶ 11 n.19 (DSLAMs are "electronics" that "synchronize end user addresses with telephone company equipment and also separate" the low and high frequency signals).

"unified" loop element in a manner that treats all loop facilities that provide transmission functionality (whether copper, fiber/copper, or all fiber loops) in exactly the same fashion.

There is no legitimate doubt that a competitive LEC's use of the fiber feeder between a remote terminal and the incumbent LEC central office is included within the definition of the local loop.[165] Fiber feeder is simply outside facility plant that typically runs between a remote terminal and an incumbent LEC central office and is used (in NGDLC applications) to carry aggregated voice and data traffic on either the same or separate fibers.[166] In fact, as recognized by the Commission's own costing rules, the ILECs have commonly employed fiber feeder with older versions of DLC electronics that multiplex voiceband signals using time division multiplexing ("TDM") to aggregate traffic from many customers onto higher capacity facilities at a remote terminal.[167] In 1996, the Commission correctly determined that the use of fiber

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[165] *See, e.g., Local Competition Order* ¶ 381; *UNE Remand Order* ¶ 165; *AT&T Corp.* v. *FCC*, 220 F. 3d at 618-619; *see also Line Sharing Recon. Order* ¶ 18. AT&T addressed this issue in full in the *Line Sharing Recon. Order* (Comments at 10-14, Reply Comments at 5-6, 10).

[166] Some ILECs, particularly SBC and BellSouth, are deploying fiber-to-the-curb or all fiber loops in portions of their networks. *Third Section 706 Report* ¶ 82. *See also* News Release, *SBC Begins a New Phase of Project Pronto*; *Deployment of PON, WDN Extends SBC's Lead in Next-Generation Network Deployment* (May 9, 2001) (available at http://www.sbcdata.com/content.0,3893,378,00.html). The service- and technology-neutral principles that establish the appropriate treatment of the unbundled loop element must also apply to all fiber loops, as well as any related electronics used to multiplex and demultiplex voice and data traffic. *See infra* Part IV(B)(1).

[167] In fact, the reference to the current technology as "next generation" is a tacit acknowledgement that the technology provides a transmission function, a premise that no one challenged until the ILECs seized on the error in the *UNE Remand Order* to support their efforts to wall off CLEC access to NGDLC loops. For example, in November 1999, WorldCom reported that more than 20% of their consumer loops were served by fiber fed DLCs. *UNE Remand Order* ¶ 271 n.419. At that time, very few of those fiber-fed DLCs were capable of providing DSL-based service to customers.

feeder as transmission functionality *at any point* between the customer's premises and the incumbent LEC central office is entirely consistent with – and indeed required by – the existing definition of the loop. *See Local Competition Order* ¶ 383; *see also* 47 C.F.R. 51.319(a)(1).

The ILECs' use of a different multiplexing strategy to send high frequency signals in the NGDLC architecture (statistical multiplexing)[168] does not change the fact that the fiber feeder is used solely to provide transmission functionality between a customer's premises and a central office, the very hallmark of a local loop. Moreover, contrary to questions raised in the Commission's *Line Sharing Recon. Order* (¶ 61), CLECs' use of the fiber feeder to provide transmission functionality between the customers' premises and the central office is *not* analogous to shared transport.[169] Shared transport integrates the ILECs' switching and transport functionality and enables competitive LECs to share in the efficiencies of the incumbent LECs' transport networks, *but only when they are using ILEC-provided switching*.[170] But, as explained above, DSLAMs perform no switching functionality at all. Thus, the ILECs' fiber feeder in the NGDLC architecture cannot be "shared transport."[171]

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[168] Unlike time division multiplexing, which is used for voiceband signals, statistical multiplexing permits more information to be transmitted on a facility per unit of time, because the arrangement allows the DSLAM at the remote terminal to send data packets in any order they arrive and does not require the reservation of capacity for idle users. Riolo NGDLC Dec. ¶¶ 59-61; AT&T *Fifth FNPRM* Comments at 62.

[169] AT&T *Line Sharing Recon. Order* Comments at 10-14.

[170] *See* 47 C.F.R. § 51.319(d)(1)(iii) (shared transport is defined as "transmission facilities shared by more than one carrier, including the incumbent LEC, between end office switches, between end office switches and tandem switches, and between tandem switches, in the incumbent LEC network"); *cf. UNE Remand Order* ¶ 372 (noting that it is technically infeasible to use shared transport with competitive LEC-provided switching).

[171] The Commission also asks whether it should place capacity or quality of service ("QoS") limitations on fiber-based loops. *Notice* ¶ 41. That should not be necessary provided that the (continued . . .)

c. The multiplexing functionality of OCDs and similar devices are also "attached electronics" of the loop.

Finally, the record establishes that when the signals on a loop are multiplexed, a CLEC cannot obtain access to its own customers' signals until the ILEC performs the complementary demultiplexing function at the central office end of the loop.[172] Otherwise, neither the CLEC nor the ILEC itself can access and deliver its customers' packets to the next element in its network for either voice or data traffic.

For low frequency (voice-band) signals, the incumbent LECs are introducing electronics into their NGDLC architecture that demultiplex the separately-aggregated voice traffic. This function is typically performed by a central office terminal ("COT"), which enables voice-band traffic to be directed to circuit switches that will ultimately route the communication to diverse end points.[173] Similarly, the signals carried in the high frequency band of the copper subloop are placed upon a multiplexed facility and also require a compatible central office demultiplexing

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incumbent applies any QoS limitations solely upon nondiscriminatory network engineering parameters. CLECs should be allowed flexibility to request all technically feasible fiber feeder capabilities as part of their request for a unified loop. This would include requests for any technically feasible fiber transmission media and all technically feasible transmission speeds and quality of service classes. Application of the nondiscrimination requirement would thus require the ILECs to treat all such CLEC requests in a nondiscriminatory manner compared to those of other carriers, including the ILEC itself.

[172] AT&T *Fifth FNPRM* Comments at 61, 62, n.109; AT&T *Fifth FNPRM* Reply Comments at 47-51; AT&T *Line Sharing Recon. Order* Comments at 13-14; AT&T *Line Sharing Recon. Order* Reply Comments at 8-9.

[173] COTs (specifically GR303 COTs) permit the DLC to connect a customer's copper wire subloop to a time slot on a time division multiplexed facility between the RT where the DLC is located and the ILEC central office when the customer makes a call. The COT establishes the connection between the time slot and the switch port interface that permits a call to be made or received. This arrangement also exists with the older vintages of DLC that are GR303 compliant.

capability. This is typically provided through the use of an OCD. The DSLAM in the remote terminal co-mingles individual customers' data packets using statistical multiplexing and then places them on the feeder facility to the central office. These packets must be regrouped at the central office so only the carrier of the customer's choice may access them for transmission over its network.

This functionality is provided by the OCD, which receives the packets from the subtending RT, and delivers the packets from individual customers to transmission facilities connecting to the network of each customer's chosen service provider, including the incumbent LEC. This functionality is virtually indistinguishable from that performed by an Add-Drop Multiplexer and no one, including the ILECs, have argued such functionality constitutes "switching." The facility terminates (at the far end) on the service provider's packet switch for routing through the chosen carrier's data network. In this capacity, the incumbent LEC's OCD provides *only* a demultiplexing/multiplexing and cross-connection function that simply puts all the packets destined for each carrier – including the ILEC – on the same facility.[174] In fact, the statistical demultiplexing function of the OCD is merely a more efficient application of the same functionality as the time division demultiplexing done by the COT, which – as at least one ILEC has conceded (*see supra* Part IV(B)(1)) – is clearly part of the overall loop element when next generation facilities are deployed.[175]

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[174] Alcatel *Ex Parte*, CC Docket 98-141 (filed Feb. 8, 2001).

[175] AT&T *Line Sharing Recon. Order* Comments at 13-14, AT&T *Line Sharing Recon. Order* Reply Comments at 9-10.

And, without these functions, there is no way for *any* carrier, including the ILEC, to segregate its own customers' traffic from the fiber feeder. In the absence of these functions, no carrier – not even the ILEC – could provide advanced telecommunications services using its own packet switching equipment deployed in its own data network.

Finally, after the demultiplexing function has been performed at the OCD, there is no need for a switching functionality to send the segregated data packets to individual carriers' data networks. Rather, all that is left to do is to establish interconnection from the OCD to the CLEC's (or the ILEC's) collocation or onto a transport facility.

Thus, the evidence compels a finding that both the OCD and the COT are part of the transmission path between a customer's premises and "a distribution frame (or its equivalent) in an incumbent LEC's central office,"[176] because they are, by virtue of the ILEC's chosen network design, the first place a CLEC can access its individual customers' signals in the central office before the traffic is switched by the ILEC. Accordingly, the COT and OCD (or similar device) are "attached electronics" that serve as the necessary physical endpoint of the network side of the local loop.[177]

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[176] *See* 47 C.F.R. § 51.319(a)(1).

[177] If the OCD were not designated as part of the loop, it would require each CLEC collocated at a central office to establish its own high capacity facility to *each* serving area interface ("SAI") near the ILEC's remote terminal where its customers' copper facilities are terminated in order to provide comparable services to the ILEC. Such a requirement would make the provision of advanced telecommunications services to end-users prohibitively expensive. *See supra* Part IV(B)(3)(a).

3. Competitive Carriers are Severely Impaired without Access to "Unified" Loops.

The record evidence already established in the *Fifth FNPRM* and the *Line Sharing Recon. Order* proceedings demonstrates that CLECs' ability to compete for both voice and DSL-based telecommunications services is severely impaired if they do not have access to all of the transmission functionalities associated with the "unified" loop element, and that such access is the only way residential and small business competition can be fostered on a national basis.[178]

Without unbundled access to "unified" loops, CLECs cannot provide ubiquitous, timely, and cost efficient DSL-based service that is qualitatively similar to the same service currently being offered by the ILECs.[179] And notably, given the Commission's extremely narrow exception for access to "packet switching," any competitor that wished to access the high frequency of the loop must have its own packet switching equipment. Nevertheless, "unified" loops are the only means by which competitive carriers can access end users served by NGDLC architecture, because neither spare copper, RT collocation, nor pure facilities-based options provides a viable mass-market alternative. The inability to use a "unified" loop thus "materially restricts the number or geographic scope of the customers" competitive carriers can serve. *UNE Remand Order* ¶ 97. The inability to provide DSL-based services over fiber-based "unified" loops, in turn, materially diminishes competitors' ability to provide the services they seek to

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[178] AT&T *Fifth FNPRM* Comments at 50-64; Riolo NGDLC Dec. ¶¶ 65-90; AT&T *Fifth FNPRM* Reply Comments 59-69; AT&T *Line Sharing Recon. Order* Comments 14-21; AT&T *Line Sharing Recon. Order* Reply Comments 12-13.

[179] If a CLEC is impaired in deploying a facility to carry analog voiceband traffic, then the CLEC is equally impaired in deploying the facility to carry its customers' higher-frequency traffic – regardless of the ILEC's election to provide separate connectivity for such traffic. Indeed, if *separate* connections were actually required for low and high frequency traffic, the impairment would be at least twice as great.

offer, because it forces the competitor to invest in inferior "loops" or other RT-based collocation alternatives that – even if available – are prohibitively time consuming and expensive.

If ILECs were permitted to limit CLECs' access to "unified" loops simply because the incumbent LECs choose to implement transmission facility upgrades, they (and their affiliates) would be the only entities able to benefit from the even greater economies of scale, scope, and transmission capabilities of the next-generation loop plant, which other market participants cannot readily replicate. SBC, for example, has claimed that the acquisition cost of a DSL subscriber through a remote terminal will be 25% lower than the acquisition cost of a DSL subscriber through a central office.[180] Moreover, as discussed in Part II(B)(2)(b) above, SBC has acknowledged that the entire cost of its "Project Pronto" architecture could be recouped from cost savings alone. All this points to the conclusion that the deployment of DSL is simply a natural progression in loop plant transmission technology. Moreover, the obvious result of precluding CLEC access to "unified" loops would be diminished competition for both traditional voice and advanced services and reduced CLEC incentives to invest in their own network equipment to provide advanced services. These results are flatly inconsistent with all of the goals articulated by the Commission in the *Notice*: it will preclude competition, provide disincentives to CLEC investment and slow the growth of advanced services.

a. RT collocation does not offer competitors a viable alternative to the incumbent LECs' unbundled "unified" loop element.

The record of CLEC impairment if they are denied access to unified loops is overwhelming. A simple review of the available space at remote terminals and technical

[180] *See* UBS Warburg Summary of Sponsored Meeting with SBC (Feb. 5, 2001).

considerations associated with remote collocation shows that CLEC collocation at or near remote terminals is impracticable and uneconomic. Moreover, the specific requirements for remote access to copper subloops are both technically cumbersome and hugely expensive. And since the addressable market from a remote terminal site is substantially smaller than that available from a central office collocation, remote collocation is virtually always uneconomic. Thus, access to "unified" loops qualifies under all prongs of the Commission's "impairment" standard. Indeed, the Texas and Illinois commissions have already reviewed RT-based collocation proposals and found that they do not offer competitors a viable alternative to the incumbent LECs' unbundled "unified" loop element.[181]

In order for a CLEC to collocate its own DSLAM at (or near) an ILEC's remote terminal, a CLEC must have access to the following:

- a physical location where it can deploy its equipment;
- power to run the equipment and heat, ventilation, and perhaps air conditioning ("HVAC") to control the equipment environment; and
- efficient means to connect and modify cross-connection of the CLEC's equipment to other necessary facilities, including the copper pair on the customer's side of the remote terminal and fiber feeder facilities back to the central office.[182]

But space constraints generally prevent more than one carrier (*i.e.*, the ILEC or its advanced services affiliate) from placing its own DSLAM in a collocation at a remote terminal.

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[181] *See id.*; *Petition of IP Communications Corp. to Establish Expedited Public Utility Commission of Texas Oversight Concerning Line Sharing Issues*, Docket Nos. 22168, 22469, Arbitration Award (Tex. P.U.C. July 13, 2001) ("TX Arb. Award"); *Texas II*; *Illinois Bell Tel. Co., Proposed Implementation of High Frequency Portion of Loop (HFPL)/Line Sharing Service*, Docket 00-0393, Order on Rehearing at 24-29 (Ill. Commerce Comm'n Sept. 26, 2001) ("Ill. HFPL/LS Order").

[182] *See* Riolo NGDLC Dec. ¶¶ 65-84.

Existing remote terminals were generally sized for the area and service mix they were expected to serve at the time they were built, and thus the incumbents have acknowledged that their remote terminals generally lack space for competitive LEC equipment.[183] And even where there may be some extra space in new or existing remote terminals, such terminals are inherently incapable of supporting industry-wide access to retail customers. It is also unlikely that any available remote collocation space will have the power and HVAC necessary for proper deployment of a CLEC's electronics.[184] And recent ILEC testimony further demonstrates that even in the limited instances in which a CLEC could collocate at the RT, the CLEC would *still* have to engage in construction, because it typically has to connect to its customers' subloop facility at a Serving Area Interface ("SAI") in order to take that traffic back to its network. As economically infeasible it may be to collocate at an RT, the situation is even worse for SAI

[183] For example, SBC has previously advised the Commission that "there is little or no excess space in cabinets," which are the most prevalent of the three types of remote terminals currently deployed. *See Applications of Ameritech Corp., Transferor, and SBC Communications, Inc., Transferee, for Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95, and 101 of the Commission's Rules*, CC Docket 98-141, Letter to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, from Paul K. Mancini, Vice President & Asst. Gen. Counsel, SBC, Feb. 15, 2000, at 2 (regarding Ownership of Plugs/Cards and OCDs) ("SBC Letter"). *See also* Riolo NGDLC Dec. ¶ 67. Verizon and BellSouth have similarly indicated that its RT space can rarely accommodate competitive carriers. *Deployment of Wireline Services Offering Advanced Telecommunications Capability, et al.*, CC Docket Nos. 98-147, 96-98, Verizon Comments at 27 (filed Oct. 12, 2000) ("[R]emote terminal space remains at a premium, with little or no room for collocation."); *see also* Public Forum; *Competitive Access to Next Generation Remote Terminals*, CC Docket Nos. 96-98, *et al.*, Tr. at 22-24 (May 10, 2000). More recently, in the Virginia arbitration, Verizon's experts would not even estimate the proportion of RTs where collocation would be possible. *See* Virginia Arbitration Hearing Tr. at 866 (Richard).

[184] *See* Riolo NGDLC Dec. ¶ 73.

collocation, because SAIs are rarely located in a remote terminal.[185] In most instances, SAI are too small to accommodate deployment of *any* additional equipment (such as transmission equipment or DSLAM functionality). Moreover, SAIs are not designed to provide the necessary power and HVAC for collocation equipment because they typically house only a set of cross-connection blocks, which do not require environmental conditioning.[186]

As AT&T previously explained,[187] in order to implement a collocation at (or near) the SAI in a remotely practical manner, a CLEC must be able to:

- obtain the necessary permissions to construct (including related costs for trenching, conduit, and cabling and any necessary battery power) a parallel SAI;
- arrange for any necessary easements, rights or way, and zoning requirements;
- economically deploy or obtain feeder plant to re-home a portion of the subscribers terminating on the ILECs' SAIs to the CLEC-deployed remote terminal; and
- obtain rights of ways and economically deploy or obtain high-bandwidth feeder plant to connect its remote terminal/DLC either to a collocation within the ILEC's central office or directly to its own network.

Even assuming that CLECs could obtain the necessary rights of way, capital and time to self-provision such facilities, deployment of any equipment in an SAI is not economically

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[185] *See* Virginia Arbitration Hearing Tr. at 871-872 (Rousey) ("We are talking [about] several issues here, one about collocation and I think the other is access to the network . . . Usually, [the SAI] is not going to be [at the RT], so the actual access points to the distribution facilities are, for the most part outside, so you have the issue of collocating the equipment and the issue of tying to the facilities.").

[186] Cross-connection blocks are passive pieces of equipment that do not require associated electronics, thereby obviating the need for environmental controls.

[187] *See* Riolo NGDLC Dec. ¶¶ 74-76, 83.

sustainable on a mass-market basis, because remote collocation only enables a CLEC to interconnect to the ILEC distribution plant for the limited number of customers served by the individual SAI. Experience has shown that CLEC collocation at the central office requires a formidable commitment (*see UNE Remand Order* ¶¶ 262-266), but central office collocation costs can at least be amortized over the universe of potential customers that a CLEC might expect to win out of an entire central office. Thus, even if the costs of a particular remote terminal collocation were marginally smaller than those of collocating at the central office (a questionable assumption), the universe of potential customers from which those collocation costs can be recovered is significantly smaller than the number of customers served from a central office. Moreover, the number of remote collocations needed to serve all of the customers from a single central office is significantly larger, because there are typically multiple RTs serving a central office. Thus, in order to be able to serve all of the customers served by a single central office, a CLEC will need to build multiple *sets* of remote facilities, one set for each RT. As a result, the per-customer cost of such collocation is vastly higher than the cost of central office collocation, and is cost-prohibitive in virtually every case.[188]

The CLEC must also incur the cost of routing its traffic from the SAI or RT back to its network. Thus, it must obtain separate dedicated transport facilities from each SAI or RT. But a CLEC cannot expect to serve a large proportion of the customers from an incumbent's central office (or even a large percentage of the DSL customers in a central office). Thus, in order to

[188] For a DLC to be practical and economic, it must be nearly fully utilized. The ILEC can realize these necessary economies of scale because it has designed its remote terminal to efficiently serve most of the entire base of customers assigned to the remote terminal. CLECs cannot reasonably expect to achieve such scale. *See* Riolo NGDLC Dec. ¶¶ 80-83.

serve a modest fraction of customers at a typical single central office – and assuming there were only two RTs service that office (and two SAIs serving those RTs)[189] – a CLEC would typically need *four* facilities involving four separate construction projects and also would have to buy (or construct) at least four dedicated transport facilities.[190]

In addition to the evidence already on the record, AT&T has obtained additional evidence in its Virginia arbitration that confirms that the ILECs' RT-based proposals for obtaining access to mixed copper/fiber loops are impracticable and uneconomic. In the Virginia arbitration proceeding, Verizon has set forth a RT-based proposal (called TOPIC) that so severely impairs the CLECs' ability to access fiber-based loops that AT&T was forced to oppose any inclusion of Verizon's proposed contract language that relates to access to fiber-based loops and feeder subloops.[191] In particular, the unrefuted evidence in that proceeding confirms that the ILECs' RT-based alternatives are so difficult and cost-prohibitive that they are of no practical use to AT&T:

- **No Space at the RT** – Verizon does not contest that there is little room for collocation at its RTs because such space remains at a premium;[192]

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[189] This is a conservative assumption, since central offices may serve tens of thousands of loops but RTs typically serve a few hundred and rarely more than 2,000 loops. *See* Riolo NGDLC Dec. Exhibit B.

[190] Of course, obtaining only four dedicated transport facilities would leave the CLEC unprotected against a facility failure. Thus, in order to have the necessary redundancy to assure continuous service, the CLEC would either need to purchase two diverse facilities from each RT or construct a ring. In either case, this entails significant additional cost and complexity.

[191] Ultimately, AT&T requested that this issue be deferred until the Commission addresses it in other proceedings.

[192] Virginia Arbitration Hearing Tr. at 866 (Richard).

- **Prohibitive Construction Costs** - Even in the limited instances in which a CLEC could collocate directly at a remote terminal, it would still have to engage in construction because it must route its customers' traffic to an SAI (which is rarely located in a remote terminal) in order to take that traffic back to its network;[193]

- **Additional Costs and Delays** - CLECs are responsible not only for all of the cost to construct the remote facilities ("TOPICs") – including related costs for trenching, conduit and cabling and any necessary battery power – but also must arrange for any necessary easements, rights of way and zoning requirements;[194]

- **Uneconomic Scope and Scale of Construction** - CLECs must typically construct multiple TOPICs to serve all of the customers served by a single central office because there are multiple RTs (and two SAIs, on average, per RT) for each central office;[195]

- **Dedicated Transport Costs** – Once constructed, the CLEC must buy *separate* dedicated transport facilities from *each* TOPIC;[196] and

- **Timeliness** – Each separate TOPIC provisioning scenario is "unique and fact specific." And each project (as well as each provisioning of feeder from the TOPIC to the Verizon central office) is subject to a "negotiated" provisioning interval. Thus, Verizon provides the CLEC no guarantee of when any of the construction will be completed.[197]

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[193] Virginia Arbitration, Hearing Tr. at 866 (Richard); 871-72 (Rousey).

[194] Virginia Arbitration, Hearing Tr. at 874; *see also* Verizon TOPIC Proposal § 11.2.18.6.3.

[195] It is also important to note that this means that when a CLEC provisions its own electronics (DSLAM and splitter) there is virtually no case in which it can avoid construction if it needs to access both feeder and distribution subloops. In the rare case that a CLEC can collocate at an ILEC's RT (where the feeder subloop terminates), the CLEC must build to reach the subtending distribution subloops at the SAI, because SAIs are almost never at an RT. Conversely, if the CLEC builds a facility to house its electronics near an SAI to access distribution subloops, it must also construct a path back to the RT to access the feeder subloop. Even then, it remains unclear how the feeder at the RT could be accessed.

[196] Virginia Arbitration, Hearing Tr. at 874 (White).

[197] Virginia Arbitration, Hearing Tr. at 868 (White) (engineering TOPICs "isn't like buying cereal off the shelf in the supermarket"); *see also* Verizon TOPIC Proposal § 11.2.18.6.6 (providing Verizon a 60 day period to respond to applications for TOPIC access); *id.* §§ 11.2.18.6.11 (negotiated interval for access to a sub-loop distribution facility), 11.2.18.7.5 (negotiated interval for access to feeder subloop facility).

Verizon's TOPIC proposal makes clear that although an incumbent LEC's scale, scope, and access to funding from ratepayers enable it to efficiently design its network to incorporate NGDLC capabilities, no CLEC could ever expect to match the incumbent LEC's scale in doing the same for itself. In fact, at least two state commissions that have examined similar RT-based proposals have reached this very conclusion.[198] Moreover, no CLEC could expect any investor to fund such a losing proposition, and even if it could, market entry would likely be so late that meaningful competition would be precluded, not just impaired.

b. All-copper loops are not a substitute for unbundled access to the ILECs' "unified" loop element.

All-copper loops are not a viable means for CLECs to access customers when they seek to provide DSL-based service where the ILEC has deployed next-generation loop equipment.[199] Indeed, the Commission has recognized that all-copper loops that run from a customer's premises all the way to an ILEC central office are *not* a viable substitute for loops that use shorter copper segments with remotely deployed loop electronics and fiber feeder facilities.[200] As further explained below, all-copper loops are not ubiquitously available, provide an inferior level of service where they are available, and may not work for every DSL transmission

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[198] *See* TX Arb. Award at 72 (the "evidence presented . . . indicates that collocating a DSLAM at the remote terminal will in most cases not only prove to be uneconomical, but also technically problematic"); *see also* Ill. HFPL/LS Order at 27-28.

[199] *See Line Sharing Recon. Order* ¶ 58; AT&T *Fifth FNPRM* Comments at 50-52; Riolo NGDLC Dec. ¶¶ 49-51; AT&T *Fifth FNPRM* Reply Comments at 67; AT&T Line Sharing Recon. Order Comments 20-21.

[200] *UNE Remand Order* ¶ 313 (even "if there are spare copper facilities available, these facilities may not meet the necessary technical requirements for the provision of certain advanced services").

technology, especially ADSL, because of interference concerns. Thus, spare copper availability alone is insufficient to assure new that entrants have a reasonable and nondiscriminatory ability to compete against the incumbents in the provision services employing DSL-based transmission technology.

First, "all-copper" loop alternatives are neither ubiquitous nor permanent. The ILECs have repeatedly acknowledged that the purpose of NGDLC deployment is to overcome loop length issues that result from the traditional copper loop network. Provisioning of services based on DSL transmission technology is distance sensitive and generally cannot be supported on copper wires over 18,000 feet.[201] With NGDLC transmission technology, however, longer copper wire lengths are typically shortened to 12,000 feet or less, which allows the ILECs to employ DSL technology to expand the transmission capacity for services available to millions of additional customers. *See Project Pronto Waiver Order* ¶ 4. In contrast, CLECs cannot provide DSL-based services to these customers using all-copper loops because of the excessive loop length, even if spare copper is still available. Moreover, in new areas where only NGDLC architecture is deployed, CLECs will not be able to access "all-copper" loops at all, because none would exist. To the extent that "all copper" loops do exist, there is no assurance that they will be preserved and maintained indefinitely. In fact, ILECs have significantly diminished incentives to continue to provide or maintain old copper wires once they convert their loops to include fiber and have increased incentives to raise prices for such "high cost/high maintenance" facilities.

[201] The availability of access to fiber-fed loops at this length is consistent with the Commission's own pricing models, which assume that an efficient carrier would always use fiber feeder on loops greater than 18,000 feet.

Second, even where available, all-copper loops have inferior transmission capacity compared to the NGDLC loops.[202] When an ILEC deploys fiber-fed, DLC-equipped loops, CLEC simply cannot obtain spare copper that will support the same transmission rates (and thus quality of service) as those available on the shorter copper run that terminates in the remote terminal.

As the table below shows, DSL electrical signals necessarily lose their strength over distance.[203] The longer the loop, the weaker the signal strength and the harder it is for transmission equipment to distinguish between the information content of the signal and surrounding environmental noise. The corollary condition is also clear: the shorter the loop length, the higher the feasible transmission rates.[204] This is why transmission technologies such as DSL provide network-to-subscriber transmission capacity (data transfer rates) that must be discussed as a function of the length of the copper facility employed and wire gauge. The following table (*id.*) illustrates the relationship:

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[202] *See General Introduction to Copper Access Technologies* (available at http://www.adsl.com/aboutdsl/general_tutorial.html).

[203] *See ADSL Tutorial* and *VDSL Tutorial* (available at http://www.adsl.com/aboutdsl/adsl_tutorial.html and http://www.adsl.com/aboutdsl/vdsl_tutorial.html).

[204] *See id.* Downstream data rates also depend on other factors, such as the wire gauge, presence of bridged taps, and cross-coupled interference. Line attenuation increases with line length and frequency, and decreases as wire diameter increases. *Id.*

Data Rate	Wire Gauge	Distance
1.5 or 2 Mbps	24 AWG	18,000 ft.
1.5 or 2 Mbps	26 AWG	16,000 ft.
6.1 Mbps	24 AWG	12,000 ft.
6.1 Mbps	26 AWG	9,000 ft.
12.96-13.8 Mbps	Not Available	4,500 ft.
25.92-27.6 Mbps	Not Available	3,000 ft.
51.84-55.2 Mbps	Not Available	1,000 ft.

There is no question that all-copper loops are not a viable method of CLEC access to customers when a carrier seeks to provide DSL-based service in areas where the ILEC has deployed fiber-fed DLC-equipped loops or other next-generation loop equipment. *See Notice* ¶ 58. Spare copper invariably provides transmission speeds, transmission rates, or bandwidth (the terms are synonymous) that are slower than those delivered on the shorter copper subloops that terminate at the ILEC's remote terminal (before the original signal can attenuate and become less distinct from the noise). This reduces the transmission capacity that competitors can provide to customers, which in turn, limits the type of customer services that can be offered and imposes a severe marketplace disadvantage on competitors.[205]

Further, several commenters have also recognized that there is a significant risk of throughput degradation for DSL-based services on all-copper loops where NGDLC is deployed

[205] For example, very high data rate DSL ("VDSL") technology has the potential to offer upstream transmission rates of up to 2.3 Mbps and downstream rates of up to 13.8 Mbps. Such rates, however, are only obtainable when the copper segment is shorter than 4,500 feet. Thus, a shorter copper segment will allow an ILEC to offer its DSL customers not only a significantly faster rate, but also emerging services that require very high transmission rates, such as video streaming. *See Notice* ¶ 58.

in a parallel cross-section of distribution plant.[206] This is because the presence of an unattentuated DSL signal interferes with the relatively weaker DSL signal coming from the CO-based DSLAMs using all copper facilities. *Id.*

For these reasons, CLECs are clearly impaired without access to NGDLC loops where they are deployed by the incumbent, because they cannot use "all-copper" loop facilities to provide DSL-based services that deliver performance at or near the same level of quality as that provided by the ILEC. This is precisely what several state commissions have already found. For example, the Texas PUC has concluded that:

> use of all-copper loops to provide xDSL services merely provides CLECs with an option that SWBT itself is spending billions of dollars to avoid . . . . In addition, some areas include no spare copper. Furthermore, CLECs have no guarantee that the spare copper will remain once Pronto is ubiquitously deployed. Thus, while 'home-run' copper alternatives may be present in some situations, the Arbitrators are not convinced that these provide the same level of service viable or permanent. [207]

Indeed, Texas and Illinois have already ordered the ILEC to unbundle the whole loop, regardless of its composition. The Texas PUC concluded that because "no viable alternatives exist with respect to provisioning xDSL," it would require SWBT to "provide CLECs access to the unbundled loop element from the demarcation point at the customer's premises to the termination (port) on the OCD in the central office, including the associated electronics at the RT and the CO . . . ."[208] Similarly, the Illinois Commission also found that the competitors were

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[206] *See Line Sharing Recon. Order* Joint Comments of Rhythms/Covad/WorldCom at 30-31.

[207] TX Arb. Award at 71-72; *see also* Ill. HFPL/LS Order at 22-23 (CLECs are impaired if restricted to all-copper loops because the provisioning of xDSL service is distance-sensitive and using only copper loops significantly reduces the potential customer base, and because copper loops can have inferior performance).

[208] TX Arb. Award at 75.

impaired without unbundled access to all of the electronics and facilities associated with an NGDLC loop.[209]

C. The Commission Should Retain Local Switching As An Unbundled Network Element For Customers That CLECs Serve With Voice-Grade Loops.

In the *UNE Remand Order* (¶¶ 259-71), the Commission found that competing carriers were impaired in providing service to most customers without unbundled access to the incumbent LECs' unbundled local switching network element ("ULS"). The bases for that determination are unchanged, and carriers' market experiences in the time since that Order have, if anything, demonstrated that the scope of the impairment is even greater than previously anticipated.

The Commission has already determined that CLECs are impaired because of the fundamental economics underlying self-provisioned switching: switches take about one year to deploy, and necessitate that carriers incur fixed costs that require significant economies of scale to recover. *UNE Remand Order* ¶¶ 258-60. The only way that competing carriers deploying new switches can generate the economies of scale that permit them to have per-unit switching costs comparable to the ILECs is to use a single switch that serves an area covered by multiple ILEC switches. *Id.* ¶¶ 258, 261. However, unless competing carriers can rely on loop-transport UNE combinations, they cannot "fully exploit[]" such switching efficiencies because that would require them to endure the lengthy and costly process of establishing collocations in each ILEC central office and to incur "distance-sensitive transport costs" to carry traffic to their switches (and to backhaul intraswitch calls). *Id.* ¶¶ 261, 269. Those costs, the Commission determined,

[209] Ill. HFPL/LS Order at 36-38.

are "significant" and could only be incurred if competing carriers "presumed significant market penetration" at a given central office, even one in a "dense" area. *Id.* ¶¶ 259, 263.

Moreover, the Commission found that a CLEC using its own switch is also required to convert each of its customers' individual loops to its own switch by using a "coordinated hot cut," a process which the Commission determined imposed "significant cost[s]" and "material delay[s]," the length of which is particularly uncertain because ILECs "generally have not successfully provisioned coordinated [hot cuts] in the volumes necessary for [competing] carriers to serve the mass market." *Id.* ¶¶ 266, 267, 271. Because of these costs and delays associated with transport, collocation, and hot cuts, the Commission found that CLECs are impaired without access to unbundled switching, except for a limited "carve-out." *Id.* ¶ 253. Specifically, the Commission stated that it believed that the absence of unbundled switching would not impair carriers when loop-transport combinations ("EELs") are available to reduce the need for collocation for customers with more than three lines. *Id.*

As demonstrated below, actual market experience has validated the Commission's general determinations, but it undermines the carve-out. In fact, the evidence clearly shows that competing carriers are impaired without access to unbundled local switching *whenever* they attempt to serve any customer who has low demand for telecommunications, and who is therefore served with a voice grade loop. Thus, there is now clear evidence that the "carve-out" is ill-conceived, lacks any sound basis in fact, and serves only to protect the incumbents' monopoly position. Therefore, the Commission should address the CLECs' longstanding

requests for reconsideration of that restriction[210] and eliminate it, except for customer locations served by DS-1 or higher capacity loops, or the economic equivalent of that technical requirement, *i.e.*, approximately 18-19 lines.

More specifically, as AT&T's actual market experience in attempting to serve these mass market customers has shown, CLECs simply cannot provide facilities-based voice services to such customers for three key reasons. First, the thin margins that are available – which result from collocation and distance sensitive transport costs uniquely incurred by CLECs, and not ILECs – make a facilities-based entry strategy unprofitable and thus unavailable in most states today. Second, carriers cannot feasibly access the large and growing number of loops served by DLC, except under extremely onerous economic and technical conditions. Third, for all voice-grade loops, the technical problems and limitations of the coordinated hot cut process make it impossible for competitors to rely upon a switched-based, or UNE-L, entry strategy for these customers, Huels Dec. ¶¶ 61-62; Brenner Dec. ¶¶ 39-41, 66-73. Moreover, the difficulties associated with hot cuts cannot be solved by EELs, because EELs are only effective for combinations of transport with high capacity loops that are not used to serve these low volume users. Brenner Dec. ¶ 5.

In sum, the hard facts show that there is no legitimate claim that CLECs are not impaired in their ability to serve low volume customers without access to unbundled local switching and UNE-P. Further, there is little likelihood that *any* facilities-based entry into the local voice market will be possible for residential customers unless competitive LECs can offer a bundled

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[210] *E.g.*, Petition of AT&T Corp. for Reconsideration and Clarification of the Third Report and Order, CC Docket 96-98 (filed Feb. 17, 2000); Petition of MCI WorldCom For Reconsideration, CC Docket No. 96-98 (filed Feb. 17, 2000).

voice and data service using "unified" loops, Huels Dec. ¶¶ 68, 86, and general facilities-based entry into the mass market is simply impossible as long as the incumbents rely on manual processes to provide competitors with access to their customers' loops. *See Notice* ¶ 46; Huels Dec. ¶¶ 61-62; Brenner Dec. ¶¶ 39-41. And critically, there is absolutely no factual basis to support a finding that denying CLECs access to unbundled switching and UNE-P to serve residential and low volume business customers would spur CLEC facilities construction. Rather, denying CLECs access to unbundled local switching and UNE-P would merely cede these customers to the ILEC monopolists.

Similarly, there is now an extensive record that the ULS "carve out" is an utter failure and impairs, rather than promotes, incentives for competitors to deploy their own switches. As an initial matter, the switching carve-out has been exceedingly difficult to apply, has generated tedious disputes, and has been manipulated by ILECs to foreclose effective UNE-P competition.[211] It has also significantly hindered competition for most business locations in the areas where it applies. The costs and technical problems of implementing hot cuts and accessing DLC loops – combined with the costs of collocation and the transport necessary to route calls from the ILEC office where a customer's loop terminates to a competitor's switch – are a

[211] *See* Order No. PSC-01-1402-FOF-TP, *Petition by AT&T Communications of the Southern States, Inc. d/b/a AT&T for Arbitration of Certain Terms and Conditions of a Proposed Agreement with BellSouth Telecommunications, Inc. Pursuant to 47 U.S.C. Section 252*, Docket No. 00731-TP (Fl. PSC June 28, 2001) ("*Fla. PSC Carve-Out Decision*"); Order, *Petition of AT&T Communications of the Southern States, Inc. and Teleport Communications of Atlanta, Inc. for Arbitration of Certain Terms and Conditions of Proposed Agreement with BellSouth Telecommunications, Inc. Under the Telecommunications Act of 1996*, Docket No. 11853-U, at 8 (Ga. PSC Apr. 24, 2001) ("*Ga. PSC Carve-Out Decision*") (addressing dispute whether ILEC can restrict UNE-P for customers with multiple locations).

formidable barrier to competition at *any* business location served with a voice-grade loop.[212] The carve-out simply ignores these impairments and the market experiences of AT&T and other competitors over the last two years. Even worse, the carve-out exacerbates these impairments by preventing CLECs from attaining efficient utilization levels for their facilities. Lesher-Frontera Dec. ¶ 13.

AT&T's experience clearly demonstrates that the mere fact a CLEC has deployed a circuit switch in an area does *not* prove that it is not impaired in its efforts to provide service to customers in that area. Brenner Dec. ¶¶ 90-91. Indeed, AT&T has already spent over $11 billion to deploy a switch-based local service offer to business customers in many areas of the country. However, AT&T and its customers experienced so many difficulties with service implementation when using the coordinated hot cut process to connect loops to its switches that AT&T was forced to cease marketing its switch-based service to all business customer locations that did not have enough traffic to warrant the use of a DS-1 or higher capacity loop. As a result, AT&T's local voice switches are still significantly below an efficient usage level, meaning that AT&T cannot achieve the same efficiencies as the ILECs when it uses its own switches.

Because of these problems, since last year, AT&T's only entry strategy to serve business locations with low-volume demand has been to offer UNE-P-based services. Thus, as the *Notice* correctly suggests (¶ 59), access to unbundled switching and UNE-P is definitely necessary to

[212] It is not meaningful to categorize business customers as "large" or "small." Brenner Dec. ¶ 18. Rather, what is significant is the level of demand for telecommunications services at any particular business location. For customers with significant demand for telecommunications services, carriers generally find it economic to use a DS-1 or higher capacity loop to provide service. On the other hand, a voice-grade loop is typically used by business customers at locations with much less intense telecommunications demand.

provide a "dependable method of obtaining access to the incumbents' loops." AT&T has had some success using UNE-P as an initial entry strategy. Brenner Dec. ¶¶ 43-51; Huels Dec. ¶ 17. But access to UNE-P does not alter AT&T's preference to use its own switches. In fact, AT&T has already moved a significant number of business customers it acquired through UNE-P to its own switches through the use of bulk migration projects for a large number of customer loops served from a single central office. *See Notice* ¶ 59 n.133; Brenner Dec. ¶ 50. Unlike hot cuts, the project-managed migrations that occurred after acquiring an appropriate volume of customers via UNE-P have not resulted in significant service outages and other delays. *Id.* However, continued application of the carve-out – and certainly any reduction in the availability of ULS and UNE-P – would serve as a strong *dis*incentive for future switch deployment unless and until the current problems and limitations of accessing and connecting loops to switches are eliminated through the implementation of an electronic loop provisioning process.

For these reasons, it is critical that the Commission allow CLECs to access unbundled switching and UNE-P at any customer location that a CLEC serves with voice-grade loops. This requirement is directly rooted in the demonstrable impairments CLECs face, and it is also administratively simpler to apply. *See Notice* ¶ 56-57, 59 (noting that "the capacity level of the transmission facilities may be better suited to matching availability of the incumbent carrier's switch to impairment of the requesting carrier"). By contrast, the ILECs' proposals to eliminate or severely restrict the availability of unbundled switching simply ignore facts. For example, proposals that the Commission should develop "triggers" to eliminate UNE-P based on a mere count of the number of switches CLECs have deployed in an area do not recognize the problems in accessing loops that severely restrict CLECs' ability to use even already-deployed switches. They also ignore that CLEC circuit switches are being used almost exclusively to provide service

to very large business customers that connect via DS-1 or higher level facilities, which can be deployed without a coordinated hot cut. *See Notice* ¶ 57. Moreover, the switching carve-out rules these carriers suggest are difficult to apply and are subject to manipulation, as evidenced by incumbent LECs' efforts to radically expand the current switching carve-out. And, in all events, the requirement that EELs be made available in areas where unbundled switching at cost-based rates may be withdrawn could only provide relief from the need to collocate. It does nothing to relieve the intractable problems that result from the use of hot cuts. Brenner Dec. ¶ 5.

In sum, no implementation proposal identified to date – other than UNE-P – allows competing carriers an equal opportunity to access customers so they can begin to provide competitive service. Moreover, given the very short time and limited circumstances in which CLECs have had to use UNE-P, there is no credibility to ILEC claims that UNE-P is a "crutch" that deters CLECs from investing in their own facilities, particularly to serve low volume customer locations. Indeed, UNE-P has barely had a chance to start bringing the benefits of competition – and fulfilling the Act's promise – to consumers. The experience in the long distance market clearly shows that facilities-based competition *follows* entry based on use of the incumbent's facilities at rates close to the incumbent's costs. Thus, it is absurd for the ILECs to suggest that facilities-based competition is ready to burst forth generally if only the CLECs would get off (or were forced off) UNE-P.

In fact, the development of facilities-based competition in the long distance market only occurred gradually, over decades. It is thus irrational to believe that facilities-based competition in local markets – which is significantly more difficult and expensive to implement – could develop in only six years, especially since the ILECs have fought so long and bitterly to oppose *any* kind of local entry that would erode their monopolies.

Moreover, long distance competition not only required patience and access to low cost supply, it also required the development of new technical capabilities to enable large volumes of customers to change their preferred long distance carrier quickly, accurately and cheaply. As outlined below, incumbents could implement a similar capability for the local market called Electronic Loop Provisioning ("ELP"), which would use currently available technology and which would enable customers to switch their local carrier using an automated electronic process. *See generally* Gerszberg Dec. The Commission should not even consider removing unbundled switching for customers using voice-grade loops (*see Notice* ¶ 59), until an incumbent has implemented automated processes that eliminate the need for manual hot cuts and provide access to all types of voice-grade loops, including DLC loops.

1. CLECs Suffer Significant Cost and Quality Impairments in Attempting to Extend Customers' Loops to their Own Switches.

Except in the very rare instances where a CLEC uses its own loop facilities, a CLEC that seeks to provide service using its own switches must also obtain access to customers' local loops. But significantly, by virtue of the ILECs' prior monopoly status, all voice-grade loops are hard-wired to ILEC facilities. Thus, CLECs alone need to take additional steps to access customers' loops in order to provide switched-based service. Because of these fundamental facts, ILECs have no incentive to make the methods to access those loops fast, inexpensive or reliable. Indeed, as AT&T explained in its comments in 1999, and as the Commission concluded in its *UNE Remand Order* (¶¶ 259-71), the process of bringing customers' existing loops to a CLEC switch is costly and causes degraded service. And ILECs are increasingly deploying DLC equipment in their loop plant, which makes CLECs' ability to access a growing number of loops

even more difficult. As a result, competing carriers' efforts to provide local service using self-provisioned switching are impaired in at least three distinct ways.

First, before CLECs can access even a single loop, they must (i) deploy switches, transport facilities, and other equipment to carry traffic from loops to the switches and (ii) establish collocation cages at an ILEC central office to connect to the loops. *See id.* ¶¶ 262-63. Second, even after that process is complete, CLECs are still effectively prohibited from accessing a substantial and growing subset of loops that are served via DLC. Third, for non-DLC voice-grade loops, CLECs can migrate them to their switch only through the coordinated hot cut process, which inherently causes CLECs' customers to receive low quality service. *Id.* ¶ 271 (hot cuts "impair[] the ability of a [competing] carrier to provide timely service").

a. CLECs incur substantial costs to access loops.

For a CLEC to access customers' voice-grade loops, they must establish collocation space at the central office serving the loops of each customer they wish to serve. As the Commission has concluded in its previous orders, establishing collocation is a time-intensive, costly process. *UNE Remand Order* ¶ 263 ("collocation imposes materially greater costs on requesting carriers than use of the incumbent LEC's switching"). In particular, the non-recurring charges for establishing collocation in a single central office can be as high as $500,000. *Id.* None of these basic facts have changed since 1999.

Although AT&T has established collocation in over 1,000 central offices nationwide, there are about 14,000 ILEC central offices, Lesher-Frontera Dec. ¶ 33, and existing rules effectively preclude CLECs from obtaining EELs, a combination of an unbundled loop with unbundled transport that could enable CLECs to avoid collocation costs. As a consequence, the

costs and delays associated with collocation remain a substantial obstacle for CLECs to overcome.

But even if establishing collocation were neither costly nor protracted, CLECs would still incur substantial cost disadvantages for the simple reason that customers' voice-grade loops are all hard-wired to ILEC facilities. Unlike ILECs, CLECs must deploy circuit switches at a location other than where their customers' loops terminate, and then purchase equipment and transport facilities needed to carry that traffic to their switches. There are substantial costs associated with "backhauling" this traffic. In a previous filing submitted by AT&T, AT&T estimated, using conservative estimates, that the costs associated with backhaul were about $100 per line. *See* Brenner Dec. ¶ 80. The principal facts and calculations underlying this figure have not substantially changed since 1999. Notably, other CLECs have also submitted evidence of their costs for the same functionality, and have arrived at a figure even higher than the one AT&T presented. *E.g.*, PACE/Birch *Ex Parte*, CC Docket 96-98 (filed Aug. 16, 2001) (Birch's non-recurring provisioning costs are $144 per loop). These costs – which ILECs need not incur – can by themselves prevent CLECs from offering competitive local service.

b. CLECs are effectively foreclosed from accessing DLC loops.

Even ignoring the above impairments, CLECs are effectively precluded from accessing the large and growing portion of analog loops that are connected to DLC equipment.[213] Brenner Dec. ¶¶ 22, 74-77; Huels Dec. ¶¶ 75-84. Although deployment of DLC can be generally

[213] DLC equipment is used to collect the traffic from all of the customers' loops terminating at a remote terminal housing the DLC, which digitizes and multiplexes all of the traffic from those loops onto a single feeder facility that carries the traffic to the central office, where it is generally terminated directly onto the ILEC's switch.

beneficial, especially to the ILEC, in one absolutely crucial respect, it significantly retards competition. Brenner Dec. ¶ 75; Huels Dec. ¶ 80. Because the DLC permits multiple customers' traffic to be carried to the central office over a single facility and that traffic terminates directly onto the ILEC's switch, there is no simple way to segregate (or access) the traffic of a particular customer. Gerszberg Dec. ¶¶ 14-16. As a result, CLECs seeking access to individual customer loops in order to provide their own switch-based service generally cannot access DLC loops in an economic manner. *Id.* Only two general possibilities exist for accessing customers served by DLC loops, both of which are cost-prohibitive and unworkable on any broad scale. *Id.* One requires the customer to be transferred, through manual work requiring a field visit, to an old copper loop that is now "spare" because it was replaced by the DLC. This method requires significant manual work and almost inevitably results in a loop that provides a lower grade of service capability. *Id.* ¶ 15. The second method requires deployment of a variety of multiplexing functions to strip the specific customer's traffic from the multiplexed feeder facility and then convert the signal from digital to analog so that it can be carried to the CLEC's collocation, where it will be converted back to a digital format for transmission on a transport facility to the CLEC's switch. *Id.* ¶ 16. This process generally makes it prohibitively expensive for CLECs to provide switch-based service to customers served by DLC loops.[214]

The anticompetitive effect of the ILECs' DLC architecture is substantial and growing rapidly. Based on data the ILECs submitted to the Commission that is already a year old, they already serve over 42 million channels via a fiber DLC – about 22% of all working channels.

[214] A third option exists, but only in theory: accessing a loop at the remote terminal. For the reasons discussed in Part IV(B)(3) above, such access is utterly impractical and uneconomic.

Brenner Dec. ¶ 76. Thus, CLECs are already significantly impaired in their ability to provide switch-based service to all of these 42 million channels. As described above, the existence of DLC has already had a substantially negative impact on AT&T's switch-based entry, even though AT&T's entry was focused in urban areas, where DLC deployment is less prevalent.

c. Hot cuts cannot be reliably performed.

Finally, after incurring the costs to collocate and to backhaul traffic to permit access to a shrinking portion of non-DLC loops, CLECs can only use their own switches to provide service if the hard-wired connection between customers' voice-grade loops and the ILEC facilities are severed and then re-connected to their own switches. The coordinated hot cut process used for this purpose is inherently unreliable. Coordinated hot cuts require (i) manual work to disconnect the voice-grade loop from the ILEC switch and to connect it to the competing carrier's collocation for transport to its switch and (ii) synchronized software changes to associate (or port) the customer's telephone number to the CLEC switch. Brenner Dec. ¶ 21. As a consequence, hot cuts inherently require extremely close coordination among the incumbent LEC, the competing carrier and the number portability administrator. *Id.* Moreover, each of those parties must perform its operations at a specific time and in a specific order, according to well-defined methods and procedures. *Id.*[215]

Because of the inherently manual nature of the hot cut process, hot cuts have all too frequently resulted in provisioning delays, prolonged outages, and other service problems that customers will not tolerate. *See* Brenner Dec. ¶¶ 39-41. Even where an ILEC meets

[215] In recognition of the need for regimented procedures in performing hot cuts, AT&T repeatedly sought explicit agreements from incumbent LECs on the precise methods and procedures for hot cuts, but it could not easily reach such agreements. Brenner Dec. ¶ 68.

performance standards the Commission has accepted in § 271 proceedings, as many as one in 10 customers may experience delays in receiving service via hot cuts, and one in 20 customers may suffer a significant service outage. *New York 271 Order* ¶¶ 298, 302. And because the process is inherently manual and requires work to be done by a number of entities, there will inevitably be other errors that increase the likelihood of additional customer service problems. But, regardless of which entity is responsible for a particular service problem, the lesson is that the hot cut process is inherently complex and leads inevitably to a poor service experience for CLECs' customers. Brenner Dec. ¶¶ 39-41.[216]

This makes reliance on the hot cut process particularly problematic under the competitive conditions found in the mass market. The affected carriers never have significant advance notice of the number of cutovers that will be ordered, the locations where they must be performed, or the particular CLECs that have ordered the cutovers. *Id.* ¶ 71. As the Commission has previously noted, "order volumes and fluctuations" are to be "reasonably expected in a competitive marketplace." *Michigan 271 Order* ¶ 199. Thus, the manual hot cut process is fundamentally inconsistent with volatile market conditions that can create sudden spikes due to marketing promotions, press coverage, or numerous unforeseen factors.

There are currently about 150 million voice-grade access lines nationwide. *See* NARUC UNE-P Resolution (adopted Nov. 14, 2001). If unbundled local switching and UNE-P were not available, and assuming only a very modest rate of competitive churn in local service, millions of hot cuts would have to be performed every year to support competition for customers receiving

[216] Significantly, even if hot cut performance could be improved, it does not address the inherently limited scale of such manual processes, nor does it address the significant costs that hot cuts impose.

service over such loops. And if local churn ever approached the levels of long distance churn, there would have to be tens of millions of hot cuts performed every year. No incumbent LEC has come even close to "successfully provision[ing] coordinated loop cutovers in the volumes necessary for [competing] carriers to serve the mass market." *UNE Remand Order* ¶ 271. Given the multiple steps in the hot cut process, the market reality is that it would be impossible to complete hot cuts in those volumes. And it is inconceivable that the outages and other service problems inherent to the process would not increase even further as more hot cuts were performed. Thus, in recognition of these facts and in support of regulatory requirements that support competition, NARUC recently adopted a resolution endorsing the continued "universal availability" of UNE-P. NARUC UNE-P Resolution (adopted Nov. 14, 2001).

Moreover, all of these defects with hot cuts are exacerbated because the non-recurring charges for hot cuts and the recurring unbundled loop rates are often unreasonable. Indeed, some ILECs have sought to *increase* existing high loop rates and to raise non-recurring charges for hot cuts to outrageously inflated levels that would plainly impair AT&T's ability to serve customers using its own switches. In all events, the Commission must be vigilant to prevent such uneconomic costs if facilities-based competition is ever to develop.[217]

In simple terms, without access to UNE-P, CLECs are severely and permanently impaired in providing service for *all* customers served with voice-grade analog loops, because

[217] As discussed below, AT&T intends to migrate UNE-P customers to its own facilities. Accordingly, it remains critical that the costs for both unbundled loops themselves and loop cutovers be reasonable and consistent with forward-looking cost methodologies. In fact, under its UNE-P migration strategy, AT&T generally pays *two* migration charges – one for the initial change in service to UNE-P, and then another if the customer is migrated to AT&T's switch. AT&T's ability to migrate UNE-P customers is dependent upon reasonable and cost-based prices for cutovers.

the hot cut process will always prevent CLECs from connecting those customers to their own switches at commercially competitive volumes and at the level of quality that customers demand. Brenner Dec. ¶¶ 39-41, 66-73. Thus, it is patently unreasonable to expect that any CLECs would enter the market or otherwise deploy additional facilities if it could only use hot cuts to access customer loops – indeed, as the next part describes, that is precisely AT&T's own market experience.

2. Market Experience Demonstrates that it is Neither Economically nor Technically Feasible for CLECs to Acquire Most Customers Through Switch-Based Service.

Competing carriers' actual market experience constitutes the best evidence of these impairments that CLECs face in using their own switches to provide local services. *See UNE Remand Order* ¶ 66. The experiences of CLECs generally and AT&T in particular establish that CLECs cannot rely on their own switches to provide a meaningful competitive alternative to the ILECs. The real world consequences of these impairments are that AT&T's switches are severely underutilized. *See* Lesher-Frontera Dec. ¶ 59. And that is primarily because AT&T has been unable to use those switches to serve customers with voice-grade loops. As reported to the Commission, AT&T has put into service about **[proprietary begin]** ********** **[proprietary end]** "voice grade equivalents" ("VGEs") in local markets nationwide. Brenner Dec. ¶ 23. Only about **[proprietary begin]** ******* **[proprietary end]** of AT&T's total VGEs – a paltry 3% of the total – are provided over analog voice-grade loops in conjunction with AT&T's own switches. *Id.* On the other hand, virtually all of AT&T's non-cable residential customers are served via UNE-P. And even though AT&T only recently began its business UNE-P offer, **[proprietary begin]** ******** **[proprietary end]** of its voice-grade loop business lines were initially provisioned with UNE-P and the total of its UNE-P business lines is nearly equivalent to

the number of business lines AT&T initially provisioned via coordinated hot cuts. *Id.* ¶¶ 23, 48, 50. This marketplace evidence demonstrates that access to unbundled switching and UNE-P is essential to serve any customer location that has low-volume demand for service and is served by voice-grade loops.

a. AT&T's experience in business markets.

In 1998, AT&T spent nearly $11 billion to purchase the assets of Teleport Communications Group and place itself in a position to provide facilities-based local service to all types of business customers. AT&T invested significant additional resources in an effort to use its own switches, together with unbundled local loops, to enter several key markets to provide local service to small to medium-sized business customers. Brenner Dec. ¶ 36. In support of this effort, AT&T designed its internal operations support systems for business customers to send *only* UNE-L orders, not UNE-P. *Id.* And, in recognition that it would be relying on coordinated hot cuts to obtain access to unbundled loops, AT&T also devoted substantial resources to attempt to achieve the coordination necessary to implement hot cuts. *Id.*¶¶ 36, 68.[218]

Despite this massive effort, even in states like New York and Texas, where there had been significant work done to improve the hot cut process, AT&T's local business entry using a UNE-L strategy foundered, because hot cuts failed to meet customers' needs, even for relatively

[218] In this regard, it is also significant to note that AT&T focused its entry efforts in areas (a) where, at the time, there was hope of obtaining hot cuts and unbundled loops at cost-based rates and (b) where it expected there would be a commercially reasonable provisioning process, both for unbundled loops and for the collocation space that are essential to implement the UNE-L strategy. Brenner Dec. ¶ 35. This reinforces that the failure of UNE-L entry is due to the inherent defects of the hot cut and related processes, and not to insufficient efforts to provide a cost-effective and reliable provisioning process.

small order volumes, and because AT&T could not practically access DLC loops. *Id.* ¶ 37. AT&T attempted UNE-L entry for about two years, from around 1998 through portions of 2001. The results of this strategy were dismal, and growth was very slow. *Id.* ¶ 38. In that period, AT&T provisioned only about **[proprietary begin]** ******* **[proprietary end]** voice-grade lines nationwide (*id.*), and there were significant provisioning delays and outages associated with these orders (*id.* ¶ 39). On a nationwide basis, customer conversions took an average of 45 days – a month and a half – from the point of sale to the establishment of customer dial tone with AT&T facilities. *Id.* Further, the likelihood of a service outage during a cutover was between 6% and 9%. *Id.* Moreover, because AT&T often could not provide service to locations that were served by DLC loops and because customers became dissatisfied with provisioning delays and other service problems associated with hot cuts, AT&T suffered significant "breakage" – *over half* of all UNE-L orders AT&T placed were cancelled prior to actual conversion, which meant that AT&T had to sell two lines for every one that it eventually served. *Id.* ¶ 40.

AT&T's experience with UNE-L entry, especially the customer feedback it received, showed that customers' dissatisfaction with AT&T's UNE-L strategy was primarily due to provisioning delays and service disruptions at the time of conversion – both of which were direct outgrowths of the problems with accessing DLC loops and the hot cut processes. *Id.* ¶ 41. In particular, AT&T found that its customers expected that switching local carriers should be essentially the same as switching long distance carriers – easy, technically flawless and undetectable. *Id.* Customers learned, however, either by personal experience or word-of-mouth that it was not so easy to change local service providers, and that the hot cut process required service to be cutover in the middle of operating hours and often required multiple calls to reschedule events. *Id.* Each additional contact gave customers less confidence in AT&T's

service and provided an opportunity for them to change their mind – which they often did. Perhaps most important, AT&T found that its customers virtually always held AT&T, and not the ILEC, accountable for all service provisioning problems, regardless of the actual cause. *Id.* The damaging effects of local service provisioning problems on AT&T's reputation were not limited to local service. AT&T found that many businesses that experienced problems in switching their local service to AT&T also took their long distance business to other providers. *Id.*

In addition, because of the difficulties in accessing loops and cutting them over to AT&T's switches, AT&T could not gain sufficient volumes of customers, and the facilities and switches that it had deployed remained substantially underutilized. *See* Lesher-Frontera Dec. ¶¶ 63-68. Because AT&T could not generate economies of scale with its switches, its switching costs also remained high, creating a significant drain on AT&T's resources. *See UNE Remand Order* ¶ 260 (finding that competing carriers are impaired when they cannot use their switches as efficiently as an incumbent). Because of the high costs and widespread customer dissatisfaction, AT&T found that serving low-volume business locations using a UNE-L strategy was simply not feasible, and it was forced to stop marketing service to those customers in that manner. Brenner Dec. ¶ 42.

UNE-P Has Allowed AT&T To Compete, And To Transition Customers To AT&T's Self-Provisioned Switching. By contrast, AT&T's market experiences with use of UNE-P to initially acquire business customers have proven to be much more successful. Following the insurmountable difficulties AT&T experienced in implementing a direct UNE-L entry strategy, around the beginning of 2001, AT&T modified its OSS so that it could serve business customers with UNE-P. Brenner Dec. ¶ 43. The results of AT&T's revamped strategy have been dramatic:

in just a few months, AT&T was able to provision **[proprietary begin]** ******* **[proprietary end]** lines, nearly as many lines as AT&T's UNE-L strategy had been able to achieve in over two years of effort. *Id.* ¶ 48. As a result, AT&T is now offering UNE-P to low volume business locations that are not covered by the Commission's switching carve-out in about 20 markets. *Id.*

AT&T's relative success in implementing this strategy was based on the improved provisioning and reliability it was able to achieve. Because UNE-P is far easier to order and provision, the average interval from the point of sale to establishment of customer dialtone fell by over half, from 45 days to just 21 days. *Id.* Moreover, the likelihood of a service interruption fell dramatically, to between 1% and 3%. *Id.* These improvements had a visible impact on AT&T's sales and marketing efforts: only about 20% of the UNE-P orders that AT&T sold were cancelled prior to conversion. *Id.* Moreover, use of UNE-P allows AT&T to provide service to businesses served by DLC loops, even though a transition of these loops to a UNE-L configuration is not practical.

After AT&T has obtained a sufficient volume of customers in a single central office, it can order bulk loop cutovers to its own switch on a project-managed basis – at least for those loops that are not served by DLC. *Id.* ¶¶ 44-45. When performed in such large numbers, the cutovers can be planned well in advance and conducted outside of business hours by technicians dedicated solely to that project. *Id.* ¶ 46. Under these conditions, such cutovers are far more manageable than coordinated hot cuts. *Id.* Indeed, AT&T has already performed a number of these project-managed cutovers for the UNE-P business customers that it has won. *Id.* ¶ 50. On these cutovers, unlike the coordinated hot cuts, AT&T's experience is that outages occur less than 1% of the time. *Id.*

Assuming that it can continue to obtain UNE-P, AT&T intends to continue to rely on it as its entry vehicle to serve low volume business locations. *Id.* ¶ 51. In fact, AT&T expects to dramatically increase in 2002 and 2003 the number of business lines it serves by using UNE-P. *Id.*, This growth would nonetheless affirmatively support the development of facilities-based competition because, as UNE-P customers are transitioned to AT&T's switches (assuming that such transitions are economic and can be competently performed), AT&T will be able to achieve better efficiencies for its existing switches and, over time, generate incentives (and funds) to expand its own switching capacity. On the other hand, if the Commission continues the switching carve-out or – even worse – imposes further restrictions on CLECs' ability to use UNE-P to serve business customers, then AT&T simply cannot continue to offer its services to those customers, and its incentives to deploy its own facilities will be reduced.

As Ms. Brenner describes, AT&T has always preferred to use its own switches to serve all types of business customers. Brenner Dec. ¶¶ 12-13. Indeed, that is a primary reason why AT&T initially sought to enter business markets using a UNE-L strategy and designed its own OSS to process only UNE-L orders. *Id.* ¶¶ 31, 33, 36. AT&T obtains significant competitive advantages by using its own switches to serve the business market, including (i) the ability to create and control the availability of advanced features and to craft a standardized nationwide offering; and (ii) greater economies of scale from sharing common support processing across the nation as well as from more efficient utilization of its already-deployed switches that can be used to reduce price, add features, expand existing facilities, or any combination thereof. *Id.* ¶¶ 12-13. Finally, AT&T has no desire to allow its largest competitor to control its service offerings. *Id.* Thus, AT&T has strong incentives to use its own facilities wherever practicable.

In sum, AT&T's use of UNE-P to serve business customers does not alter its incentives to provide service over its own switches wherever it is economic and practical to do so – to the contrary, it significantly promotes the use of AT&T switches. Where feasible, AT&T intends to migrate the business customers it initially serves through UNE-P to its own switches – as it has already done for a large number of customers. However, UNE-P has proven to be an essential first step to enable AT&T to acquire local business customers.

This two-step strategy has several significant advantages over direct UNE-L entry. First, UNE-P permits AT&T to access virtually all voice-grade loops, including DLC loops that are otherwise effectively sealed off from viable switch-based competition. Second, UNE-P is essential to avoid the coordinated hot cut problems that customers have rejected. For these reasons, without UNE-P, AT&T cannot obtain appreciable numbers of customers from low volume business locations and would be forced to abandon those market segments that it now serves via UNE-P. This in turn would reduce incentives to invest in additional switching facilities. With UNE-P, however, AT&T can generate over time a sufficient volume of customers in individual central offices so that it can migrate customers to its own switches without causing significant service problems. When AT&T can use this process effectively,[219] it can increase the use of its switches to more efficient levels, *UNE Remand Order* ¶ 260, and eventually these migrations could generate additional revenues that could allow AT&T to deploy

[219] This migration process cannot be used at all on loops served by DLC. Thus, despite AT&T's preference, customers served by voice-grade DLC loops could only be served by UNE-P. And to migrate non-DLC loops, it is necessary for AT&T and other CLECs to have (1) demonstrated technical competence by the ILEC in performing bulk cutovers on a project managed basis; (2) loop prices and non-recurring charges for cutovers that do not preclude economic entry, and (3) continued availability of cost-based UNE transport without use or co-mingling restrictions that prevent efficient network usage.

additional switches. *Id.* ¶ 274 ("the availability of unbundled switching will also accelerate the deployment of alternative networks because it will allow requesting carriers to generate revenues to justify the construction of new switching facilities").

b. AT&T's market experience in residential markets.

Since the 1996 Act, AT&T has attempted every conceivable entry strategy into residential markets. That experience demonstrates that residential entry is not practical on a broad scale without access to unbundled switching and UNE-P. As described in Mr. Huels's Declaration, AT&T's initial strategy, beginning as early as 1997, was to enter residential markets using resale, but that effort, like those of other carriers, proved to be entirely unprofitable. Huels Dec. ¶¶ 22-25. AT&T also spent considerable sums to explore using fixed wireless to provide local service to residences, but that too failed, both for AT&T and others. *Id.* ¶¶ 27-29. AT&T also invested heavily in cable telephone options, but those operations are now being spun off and will be unavailable to AT&T in the future. And while there has been some limited entry in the residential market by cable telephony operators, cable facilities are expensive to upgrade, are not currently used to offer telephony in most areas, and virtually no businesses subscribe to cable. *Id.* ¶ 29. Finally, AT&T's disastrous experiences with a UNE-L strategy in the business market demonstrates that this entry method could not possibly be applied to the residential market, where margins are smaller, market conditions even less predictable, and churn would be even greater. *Id.* ¶¶ 61-63. Thus, even though AT&T has found that residential customers have significant interest in a competing local telephone offer, none of the entry mechanisms AT&T pursued – other than UNE-P – permitted AT&T to enter any local market on a broad scale. *Id.* ¶ 50.

UNE-P Has Finally Allowed AT&T To Make Some Initial Inroads Into The Residential Market. After its unsuccessful experiences with resale and other entry mechanisms, Huels Dec. ¶¶ 34-35, AT&T has attempted to enter selected residential markets using UNE-P. *See id.* ¶¶ 38-40.[220] AT&T's market experience in this regard has, at long last, met with some success in a few states, but UNE-P is still in its infancy and far from a widespread phenomenon. Nevertheless, because the early experience of AT&T and other CLECs with UNE-P confirms the substantial competitive benefits that UNE-P-based competition can bring to consumers, and because such competition is still nascent, the Commission should adopt NARUC's recommendation and ensure that CLECs have the opportunity to provide UNE-P-based service throughout the country.

There are two prerequisites for UNE-P-based local entry in residential markets: (1) reasonable UNE rates and (2) marginally acceptable ILEC OSS performance subject to effective oversight from the state commission. Each is essential to permit UNE-P competition to flourish. To date, however, these prerequisites have been achieved only in a handful of states. AT&T's experience to date, particularly in the four states in which AT&T has offered UNE-P-based residential service thus far, illustrates both the importance and difficulty of getting both the right prices and adequate OSS in place, as well as the tremendous potential for competitive benefits once that work is complete.

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[220] AT&T's entry in a state is not an admission that all of the standards mandated by the Act have been met, but only that the situation in a state reasonably allows market entry in the hopes that the RBOC will continue to improve its OSS to the full nondiscriminatory levels required by Sections 251 and 271. *See* Huels Dec. ¶ 40 n.8. Similarly, the fact that UNE rates in a state may allow CLECs a margin sufficient to justify market entry does not mean that those rates are fully compliant with the TELRIC requirements of the 1996 Act.

In New York, for example, AT&T was nearly forced to withdraw its offer for local residential service because excessive UNE rates did not provide AT&T an adequate margin. Fortunately, the New York PSC took decisive action to resolve long-pending disputes with Verizon over UNE rates, and has now set reasonable rates that can support local entry. That decision, in turn, has enabled AT&T to reinvigorate its marketing efforts in the New York local market. For example, customers facing an announced Verizon local rate increase are now able to take advantage of an unlimited local calling service offer from AT&T that would guarantee no price increase through April 30, 2003. *See* Huels Dec. ¶¶ 41, 54.

Similarly, in Texas, the current UNE rates exceed cost-based levels, and AT&T's experience with those rates has confirmed that they are too high to permit effective local competition. The Texas PUC, which has been a leader in attempting to foster local competition, is currently conducting UNE rate proceedings in which AT&T is participating. AT&T's continuing efforts to offer local residential service in Texas reflect AT&T's hope and expectation that those proceedings will soon yield new cost-based UNE rates that will permit UNE-based competition in Texas to flourish and expand.

UNE-rate cases are pending in a number of other states as well. If those states establish reasonable UNE rates that provide CLECs the margins necessary to provide UNE-P-based service (and there is reasonable assurance of adequate OSS performance), AT&T expects to enter those states with a residential UNE-P-based offer as well. There are several states that AT&T currently anticipates being able to enter in 2002. *See* Huels Dec. ¶ 45.

Issues related to ILEC OSS performance have also delayed UNE-P-based entry. Until 2002, AT&T had offered UNE-P using only Verizon's OSS in New York and SBC's OSS in Texas, and was still testing whether it could receive the minimally necessary OSS support for

local entry from other ILEC systems, such as those of BellSouth or Ameritech.[221] It is only in the first quarter of 2002 that AT&T has begun offering local UNE-P service in parts of the Ameritech and BellSouth regions, and thus is only now subjecting those OSS to the test of real market and customer experience. While many states have worked hard in the past few years to develop performance metric plans for ILEC OSS, only some of the states that developed such metrics have been able to review the ILEC's OSS performance after actual UNE-P local entry and market competition. Indeed, the Commission only recently received comments on the need for federal performance standards and for enforcement of the ILEC's performance-obligations in provisioning unbundled elements. AT&T and other CLECs have urged the Commission in that context to step up FCC enforcement when ILECs fail to meet appropriate performance metrics. Thus, for OSS, as for pricing, the regulatory framework needed to support widespread UNE-P competition is still being worked out. Huels Dec. ¶ 44.

The time it has taken to get UNEs priced correctly and operations support systems functioning properly reflects both ILEC litigation efforts to nullify or cabin their unbundling obligations and difficulties inherent in these complex regulatory and technical areas. As a result, the Commission should reject ILEC arguments that UNE-P should be retired today when, in fact, the conditions needed to permit UNE-P based entry are only now starting to emerge. The Commission should instead ensure that CLECs have a reasonable opportunity to take advantage of UNE-P and demonstrate its competitive advantages, amass a local customer base, and generate revenues that could support further investment in local facilities.

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[221] Although Ameritech has been acquired by SBC, the OSS in the Ameritech states are different from those in the original SBC states.

Of course, even in the best of circumstances, UNE-P-based entry is not ideal. AT&T pays the ILEC an extremely high portion of every dollar that AT&T earns from the provision of UNE-P based services. Indeed, AT&T has submitted evidence in several Section 271 proceedings that ILEC UNE-P rates have created a "price squeeze" that precludes viable market entry. And in any case, UNE-P does not provide the economies of scale that facilities-based service provides, for AT&T must pay additional and identical recurring and non-recurring charges for each new UNE-P customer it acquires. UNE-P also does not allow AT&T to differentiate its service in all the way that use of AT&T's own switch to provide service would allow. *See* Huels Dec. ¶ 6.

Despite these disadvantages, there is no non-cable option other than UNE-P that permits AT&T widely to offer service to low-volume consumers. AT&T has invested billions of dollars in pursuing other alternatives, including resale and fixed wireless. None has proven capable of providing AT&T with the ability to enter a local residential market economically on a statewide basis. Huels. Dec. ¶¶ 21-29.

Where the prerequisites for UNE-P are met, UNE-P is well-suited for use in entering into the residential market. If properly implemented and provisioned, UNE-P can permit automated and error-free migration and can support virtually unlimited provisioning capacity. *Id.* ¶¶ 43, 63. Even though UNE-P does not allow AT&T to have complete control of its service offerings, it has allowed AT&T to introduce to residential customers a variety of innovative and pro-competitive service packages, as well as price competition against the ILEC. *Id.* ¶¶ 51-59.

AT&T's initial experience with residential UNE-P demonstrates that there is significant pent-up consumer demand for an alternative to the incumbent's local service offers that UNE-P-based service can effectively meet. In New York and Texas, for example, AT&T has been able to obtain more than 1,000,000 new customers with its UNE-P offers, and AT&T now has UNE-P

offers in Michigan and Georgia as well. *Id.* ¶ 17. This initial success alone demonstrates both customers' appetite for local competitive choice and AT&T's willingness to compete with entrenched providers when given a fair opportunity to do so. These customers – as well as those who have chosen to stay with the incumbent – have already benefited from innovative calling plans and price competition that CLECs have introduced and that have forced the incumbent to respond. For example, in New York, customers facing an announced increase in the price of Verizon's local service are now able to take advantage of a UNE-P-based unlimited local service offer from AT&T that would guarantee no price increase for the next year. *Id.* ¶¶ 41, 54. In Michigan, some customers who have recently switched to AT&T for local service have told AT&T that they received "win-back" letters from SBC-Ameritech which appear to contain bundling offers with different terms than Ameritech offered before local competition emerged. *Id.* ¶ 57. Thus, even if no additional facilities were deployed, the widespread availability of UNE-P provides substantial benefits to consumers.

UNE-P can also affirmatively promote facilities investment in the residential market. Because of the possibility of greater product differentiation and reduced reliance on its chief competitors, AT&T's preference is to use its own facilities and switches for residential customers. *Id.* ¶ 6. But, as in the market for low-volume business locations, the only hope for AT&T to rely on its own switches in the residential market is to offer a full suite of local and long distance voice services and DSL-based services using UNE-P and then gradually migrate customers to AT&T's own circuit-switched voice service.

The most promising facilities-based alternative for residential service today is AT&T's Multi-Service Platform (MSP). This offer, currently being introduced in New York, combines local voice, DSL Data, and Internet access with unlimited ISP access from home, and AT&T

plans in the future to add two additional derived-voice lines over DSL. AT&T hopes that the MSP bundle will generate additional revenues that could support further AT&T investment in deploying separate local facilities. **[proprietary copying prohibited begin]** ********** ********** ********** ********** ********** **[proprietary copying prohibited end]**

In particular, as Mr. Huels describes, AT&T may be able to rely on its MSP offer as a way gradually to provide facilities-based services to residential customers. *Id.* ¶¶ 65-68. This offer now relies on a combination of UNE-P and AT&T's own packet-switched network. After building a sufficient customer base, and assuming other market and regulatory conditions are favorable, it may be possible for AT&T not only to transition MSP customers' baseband voice services to AT&T's own circuit switches, but also to employ those same switches to provide facilities-based residential service to for voice-only customers as well.

AT&T's deployment of this facilities-based MSP strategy is constrained, however, by a number of factors – most notably, technical and regulatory limitations on the access to and use of loops, including the ILECs' use of DLC, which, as described above, effectively prevents access to particular unbundled loops (*id.* ¶¶ 75-84), as well as the lack of access to NGDLC loops. *See supra* Part IV(B). Moreover, a migration to switch-based service also requires access to essential interoffice transport UNEs that are not rendered impractical through the application of use and co-mingling restrictions. *See* Huels Dec. ¶ 85.

Thus, AT&T's ability to migrate voice-only residential customers from UNE-P to its own facilities is limited to those locations where AT&T has established a sufficient customer base via

UNE-P and MSP so it can achieve competitive scale economies. The higher margins available from MSP customers could allow AT&T to recoup the costs of facilities investments, making it possible for AT&T to use its facilities to serve lower margin voice-only customers as well. However, the long-term success of the MSP strategy depends upon continued national unbundling of UNEs, including the unrestricted availability of loops, circuit switching and transport, including high capacity transport facilities – yet another demonstration that the availability of unbundled switching and other UNEs supports, rather than deters, deployment of additional facilities.

* * *

Because UNE-P based competition is in its infancy, and because its competitive promise is substantial, the Commission should give it time to mature. AT&T's experience confirms that UNE-P is the only viable entry vehicle into low-volume markets, and that the availability and competitive benefits of UNE-P are just now starting to emerge. As NARUC has recommended, the Commission should permit CLECs to use UNE-P to bring competition to local markets.

In sum, AT&T's market experience in serving *all* low volume customers demonstrates that CLECs cannot offer local service on a mass market basis without UNE-P and that UNE-P offers the only currently viable path for to CLECs to provide service over their own switching facilities. It is therefore essential that carriers have unrestricted access to unbundled switching and UNE-P for all such customers.

3. The Commission Should Reject ILEC Efforts to Expand the Switching Carve-Out.

The *Notice* requests comment on how well its existing "carve-out" of unbundled local switching has "worked in practice." *Notice* ¶ 56. The simple answer is that it has not worked at